Spokane River Regional Toxics Task Force
Technical Track Work Group
May 16, 2023 Meeting

Agenda

- Summary of active projects, status, and review schedule
- Fish tissue trend assessment
- Sediment/biofilm survey
- Expanded synoptic survey
- Groundwater flow direction assessment

Current Study Status

Topics to be Discussed Today in Red

Project	Status
Fish tissue trend assessment	Draft report provided for review.
Sediment/biofilm	Initial assessment completed.
Expanded synoptic survey (plus catch basins and artesian well)	Mass balance updated from April presentation. Catch basin and artesian well assessment complete.
Groundwater flow direction study	Complete except for question on one well.
Long term water column trend assessment	SPMD results currently being analyzed for low and moderate flow conditions. High flow monitoring underway.
GE fingerprinting	Fingerprinting being updated to consider 2022 data.

Report Review Schedule – For Discussion

Data Report	Date Initially Presented at TTWG	Date Available for TTWG Review	TTWG Review Comments Due	Comments, Attempt approval for recommendation to TF	Send out to full TF for review - Post one week in advance for TF	TF abbreviated presentation, discussion and vote to approve (a)
2022 Evaluation of PCBs in Spokane River Redband Trout - Fish Tissue Trend Assessment	5/5/2023	5/8/2023	5/16/2023	5/16/2023	5/17/2023	5/24/2023
Sediment and Biofilm	5/16/2023	5/16/2023	5/16/2023	week of May 29 (doodle poll in process)	6/5/23, post by 6/2	6/28/2023
Expanded Synoptic Sampling Report - artesian well, catch basins, mass balance	5/16/2023	5/19/2023	5/26/2023	week of May 29 (doodle poll in process)	6/7/2023, post by	6/28/2023
Groundwater Report	4/18/2023	Pending TTWG decision on data situation -				6/28/2023
GE Fingerprinting Report	4/18/23, again week of May 29 (doodle poll in process)	6/2/2023	6/12/2023	6/20/2023	6/21/23, post sam	6/28/2023
SPMD - Water column Trend Assessment Report	Week of May 29 (doodle poll in process)	6/5/2023	6/14/2023	6/20/2023	6/21/23, post sam	6/28/2023

(a) - Request that TF members interested in detailed review, take part in the TTWG review process for a specific report.

2022 Expanded Synoptic Survey

- Purpose
  - Verify elevated PCB concentration in artesian well observed in 2021
  - Support updated mass balance assessment
  - Assess stormwater catch basin PCBs in the area identified by the PCB detection dog

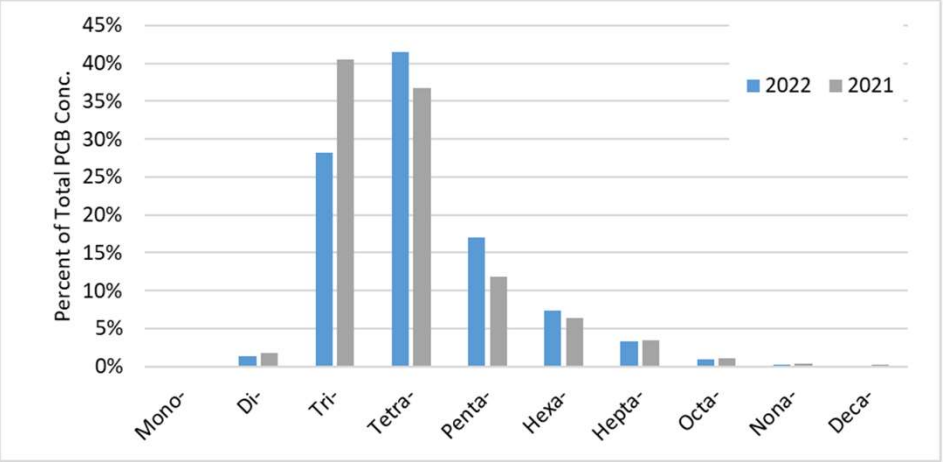
2022 Artesian Well

- Background
  - Discharge to Mission Reach observed by Ecology during summer temperature float
  - Single PCB sample in 2021 measured 2100 pg/l
    - Homolog pattern was similar to Aroclor 1242 or 1016

2022 Artesian Well Results

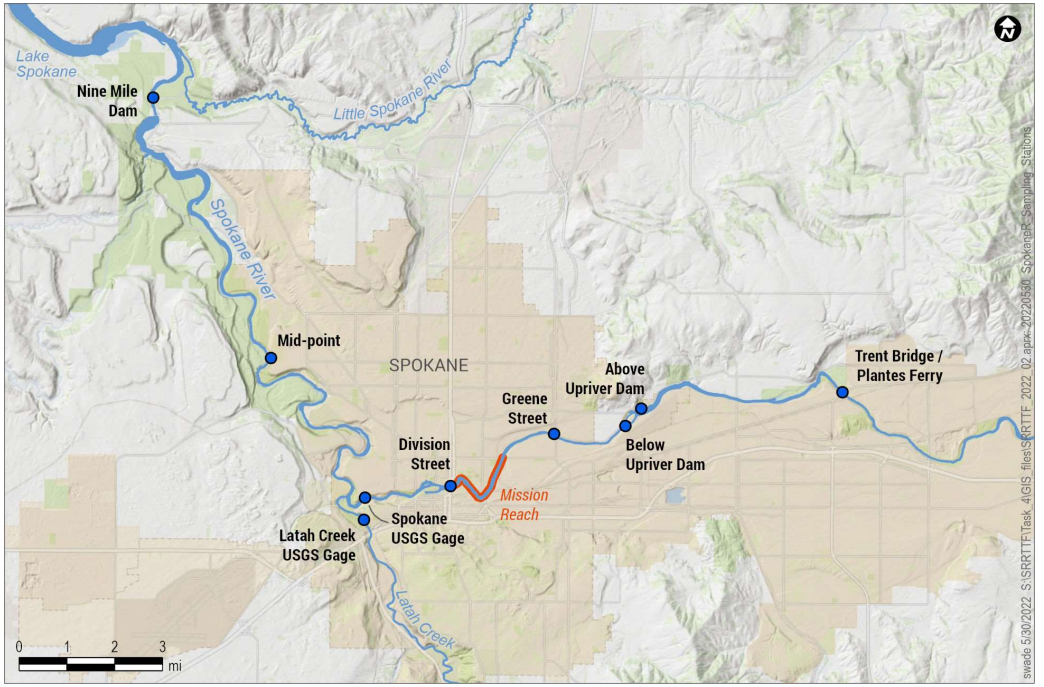
- Two samples: 1300 and 1500 pg/l
  - Confirmation that this source consistently discharges PCBs at 10x the concentration in the river
  - Significance of this load will be assessed via the mass balance

- Homolog distribution slightly different than in 2021
  - 2021: Maximum cosine similarity is to Aroclor 1242: 0.91
  - 2022: Maximum cosine similarity is to Aroclor 1248: 0.86



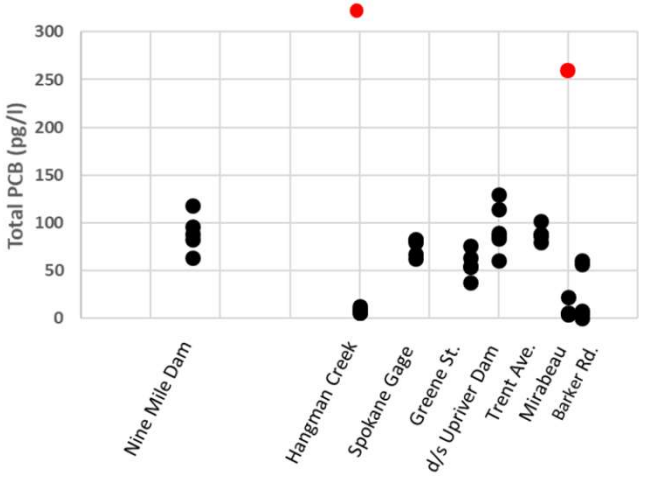
2022 Mass Balance Assessment

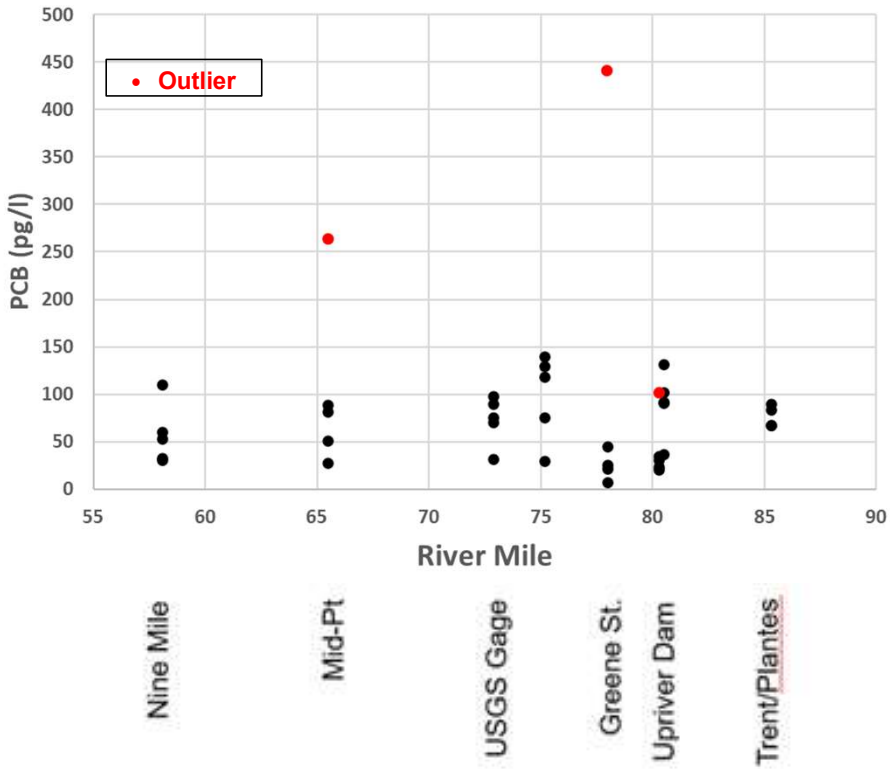
- Purpose
  - Add stations to provide more spatial resolution than prior assessments
    - Provide insight on homolog shift observed near Upriver Dam
    - Mass balance specific to Mission Reach
    - Divided the reach between USGS Gage and Nine Mile into two parts
  - Allow congener-specific mass balances
    - PCB 11
    - Upstream/downstream of GE site



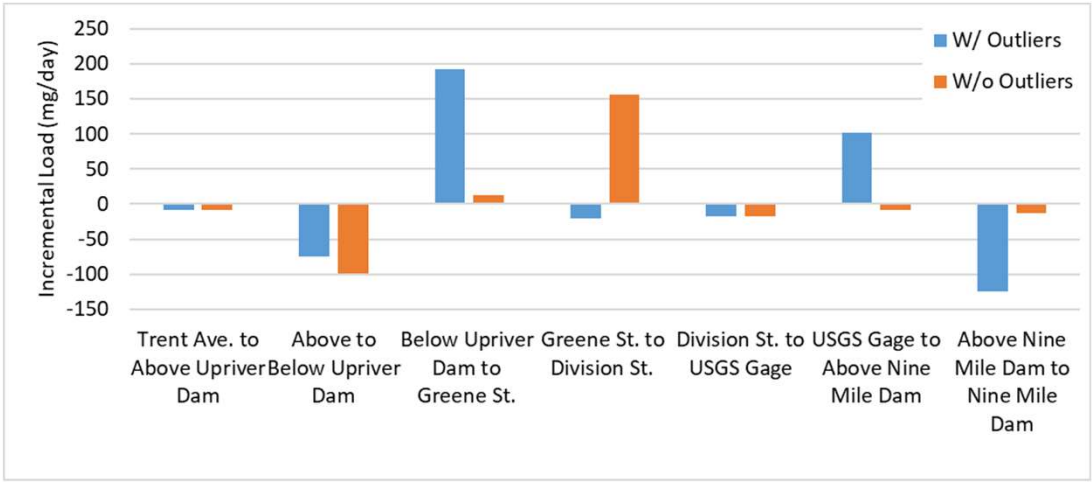
2022 PCB Concentrations
Data Received to Date

- Concentrations ~20 to 150 pg/l
- Three outliers
  - Mid-Pt., Greene St., Upriver Dam
- Similar concentrations as in 2018





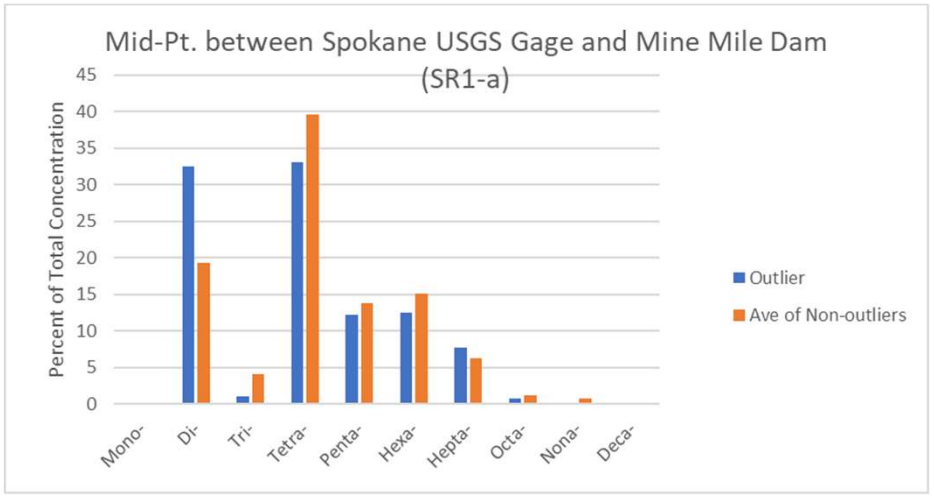
2022 Mass Balance

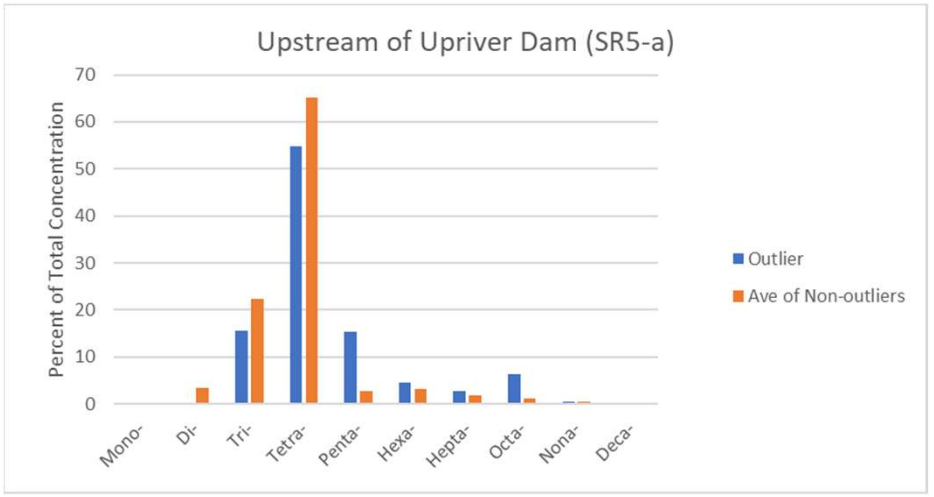


- Results highly dependent on treatment of outliers
  - Variability in concentrations makes it difficult to discern “non-significant” loads
- Loss of PCBs passing through Upriver Dam

Assessment of Outliers

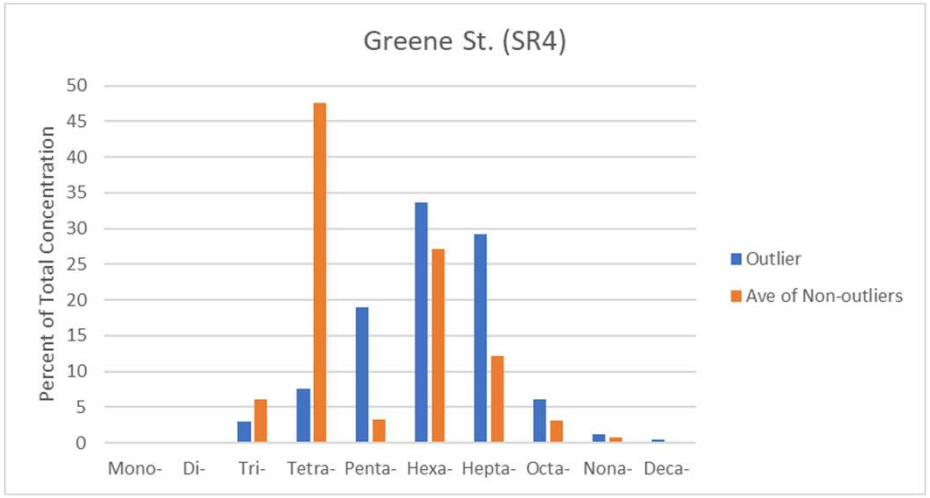
- Outliers at Mid-Pt. station and Upriver Dam look like a stronger version of the non-outlier samples

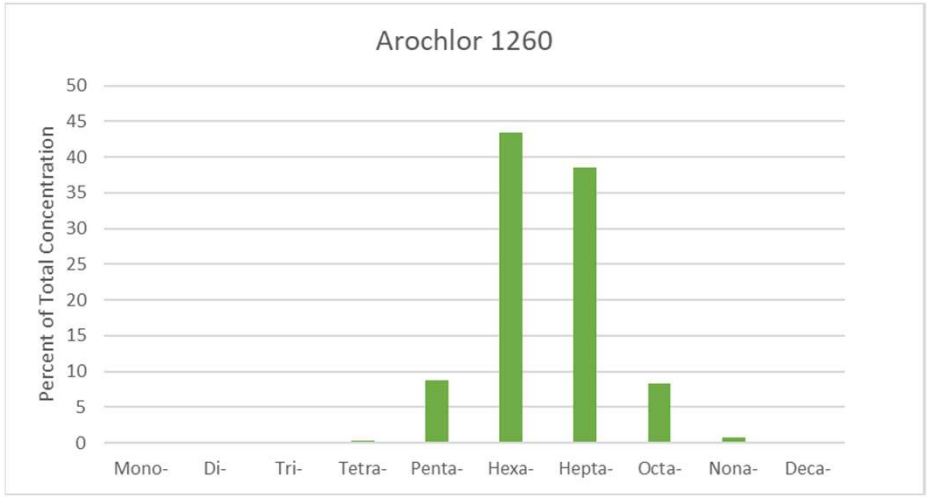




Assessment of Outliers

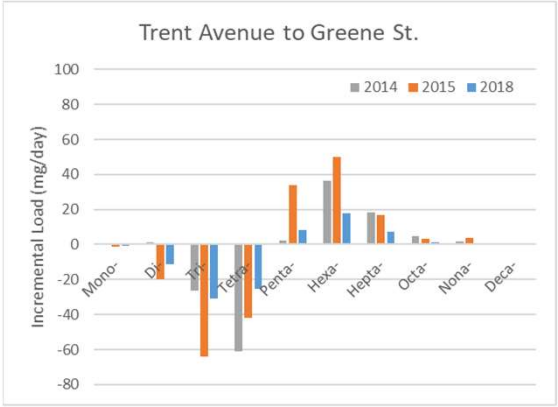
- Outlier at Greene St. looks different than the non-outlier samples
  - Similar to Aroclor 1260



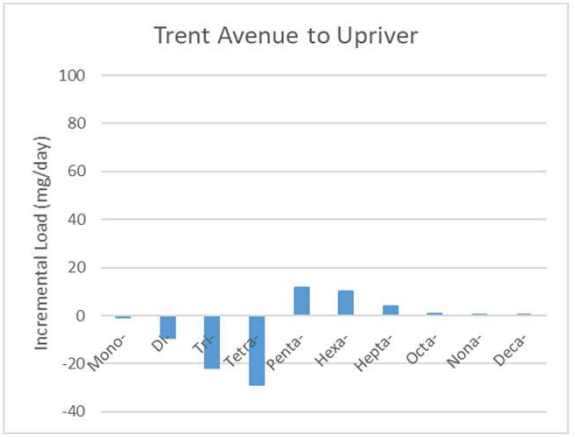


Homolog Balance between Trent and Greene

- Previous homolog-specific mass balances had shown a homolog shift between Trent Avenue/Plantes Ferry and Greene St.

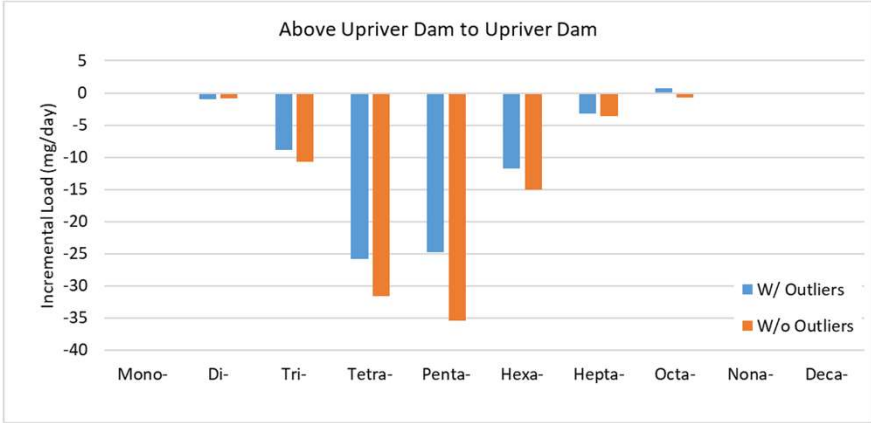


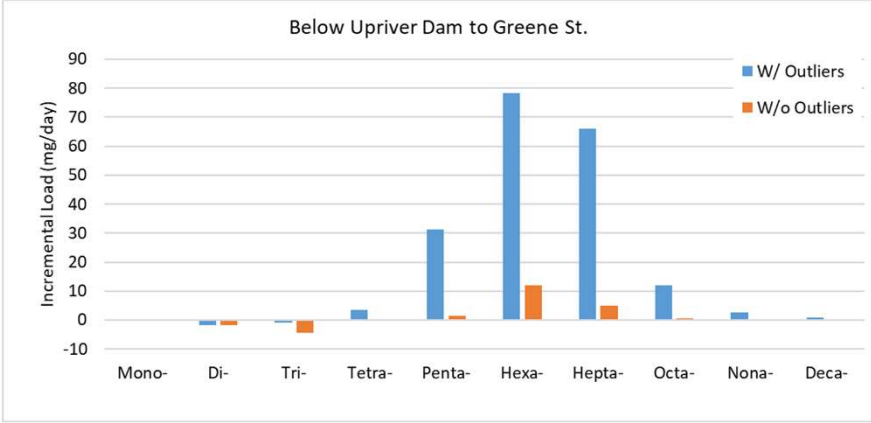
- 2018 mass balance added a station downstream of Upriver Dam
  - Suggested that the loss of lower chlorinated homologs was occurring between Trent and below Upriver Dam



2022 Homolog Balance near Upriver Dam

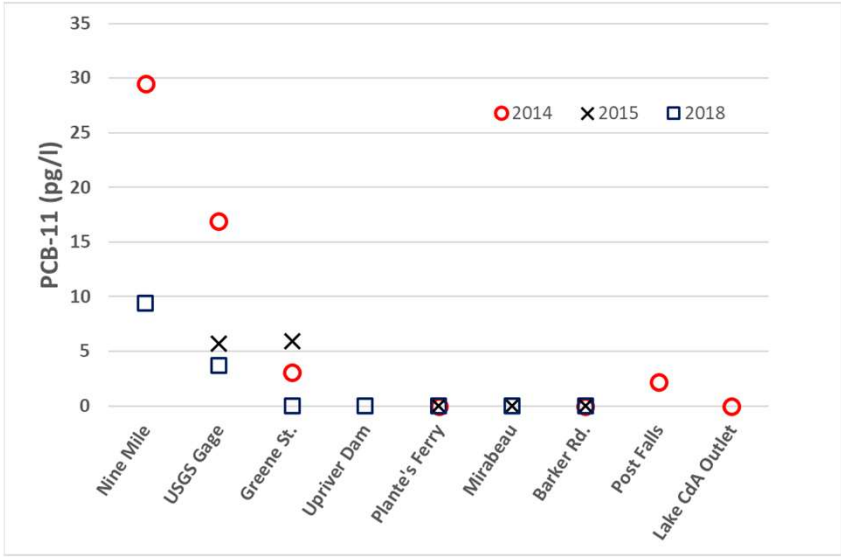
- 2022 mass balance added an additional station upstream of Upriver Dam
  - Interim results suggest that homologs are being lost as water passes through Upriver Dam
  - Results from downstream of Upriver Dam to Greene St. confounded by outlier data value at Greene





PCB-11 Mass Balance

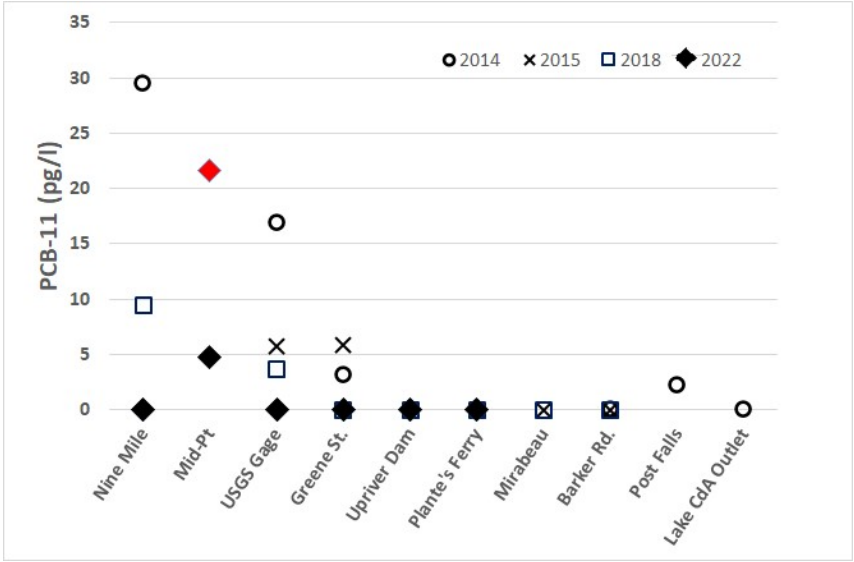
- Initial investigation of sources of PCB-11 conducted in 2021
  - Concluded that concentrations were largely indistinguishable from blanks upstream of Greene St. and increased downstream from there



  - Mass balance assessments of 2014, 2015, and 2018 survey data showed potential for an unknown source occurring downstream of USGS gage in 2018

PCB-11 Mass Balance

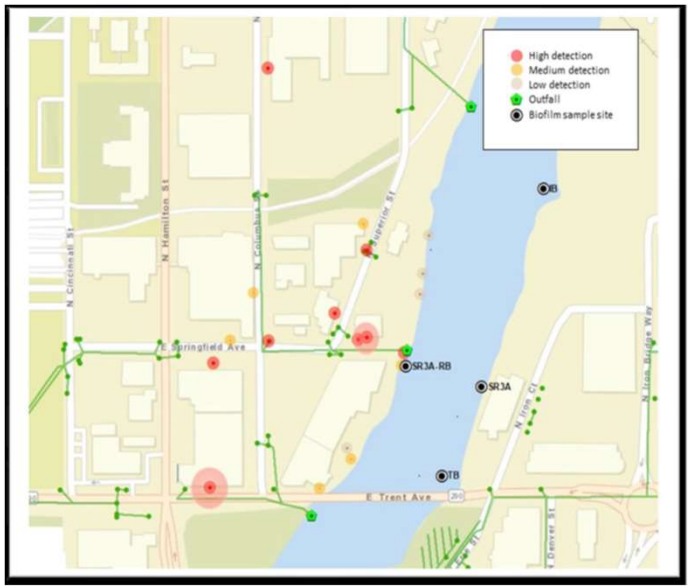
- 2022 data lower than previous years (especially at Nine Mile), but generally consistent with historical spatial trend

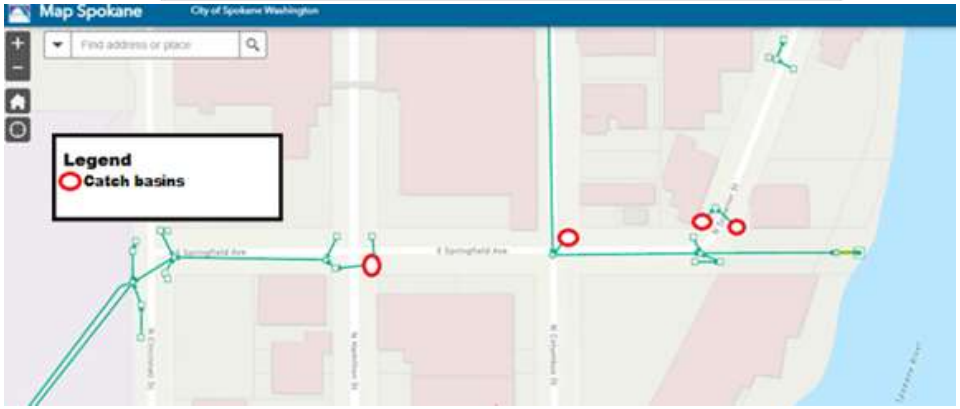


- Mass balance assessments using 2022 data show essentially zero incremental load, except
  - +12 to 56 mg/day between USGS Gage and mid-way to Nine Mile
  - - 13 to 58 mg/day between mid-way to Nine Mile and Nine Mile

PCBs in Catch Basin Solids

- Detection dog had identified elevated PCB concentrations in the Springfield stormwater service area
- PCB content measured in four catch basins in the vicinity





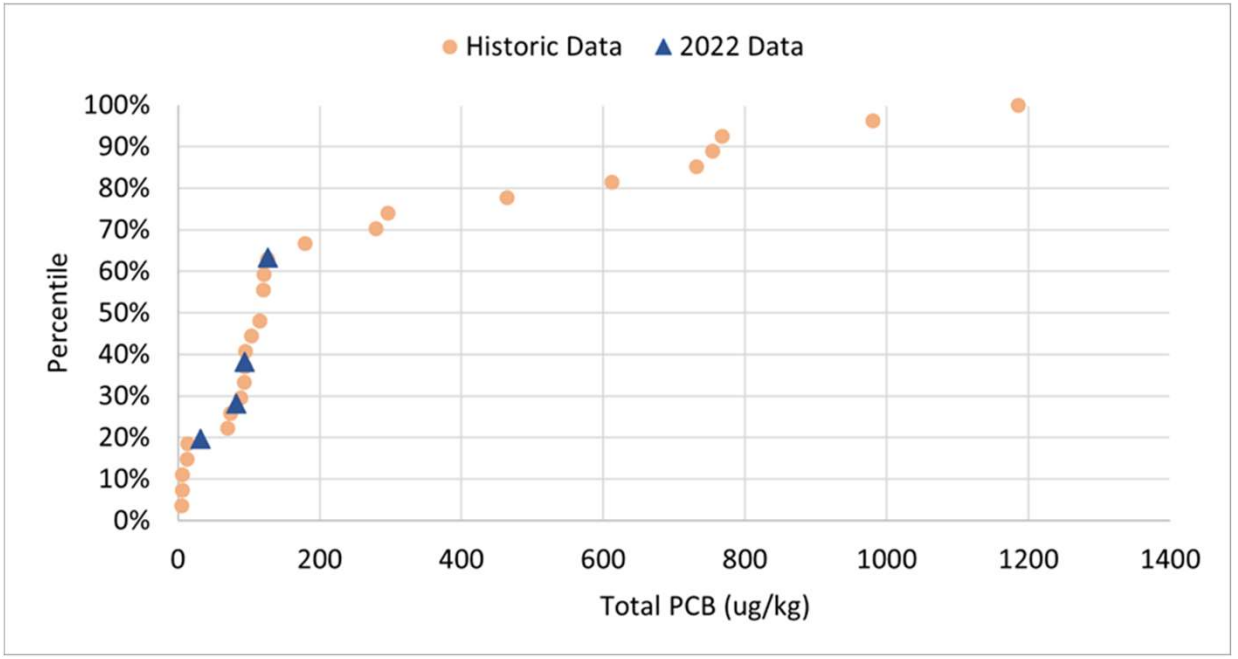
PCBs in Catch Basin Solids

- Results to be compared to historical catch basin PCB data from Spokane
  - Urban Waters Initiative (2012), City of Spokane (2014)
- If PCBs in Springfield catch basins are significantly higher than those previously observed, trigger additional monitoring

PCBs in Catch Basin Solids

- Results
  - Springfield catch basin PCBs not significantly higher than those observed elsewhere in Spokane

Location	Total PCB Concentration (ug/kg)
Catch Basin 1	127
Catch Basin 2	82.4
Catch Basin 3	94.3
Catch Basin 4	31.5



Expanded Synoptic Survey Findings

- Artesian well confirmed to be contributing PCBs at a concentration 10x that of the river itself
- Mass balance results confounded by presence of outliers
  - Loss of PCBs from above to below Upriver Dam
  - Apparent presence of Aroclor 1260 in Greene St. outlier
- Springfield catch basin PCBs not significantly higher than those observed elsewhere in Spokane
  - Doesn't rule out presence of PCBs in nearby buildings
  - Does cast doubt regarding whether there is significant migration of those PCBs into the stormwater system